REMARKS

This application has been carefully reviewed in light of the Office Action dated March 28, 2008. Claims 1, 3-4, 7, 9-19, 23, 25-26, and 28-39 remain in this application. Claims 1 and 23 are the independent Claims. Claims 1, 3, 4, 9, 15, 25-26, and 28 have been amended. Support for the amendments is found, inter alia, in the original Claims and the entire Specification, including page 52, lines 3-24. Claims 2, 5, 6, 8, 20-22, 24, and 27 have been canceled, without prejudice. New Claim 39 is added. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Art-Based Rejections

Claims 1-4, 7 and 25-38 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,555,406 (Leung) in view of U.S. Patent Publication No. 2003/0020501 (Aoki) and U.S. Patent No. 6,727,863 (Wen); Claims 8-19 were rejected as obvious over Leung in view of Aoki and Wen.

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Leung Reference

Leung is directed to a method of manufacturing photonic band gap structures operable in the optical spectrum. Leung discloses a multi-layer structure having a number of dielectric rods is that obtained by filling a ceramic bearing materials into channels of a polymer structure to form a ceramic and polymer structure and heating the ceramic and polymer structure to decompose the polymer to create the multi-layer structure (*See, Leung; Abstract; Claim 1*).

The Aoki Reference

Aoki is directed to a three-dimensional photonic crystal, and a process for the production thereof as well as a probe used therefore. Aoki discloses a two-dimensional photonic crystal (corresponding to the first or second composite dielectric of the present invention) that is obtained by crystal growth, fabrication of mask, drawing and etching, (*See, Aoki; Abstract, [008].*). Aoki discloses a lamination method wherein a microsphere being a spherical body having a corresponding dimension to a through hole is fitted into the through hole arranged on a frame of a two-dimensional photonic crystal plate to locate the microsphere therein by the use of a probe in accordance with a micromanipulation method (*See, Aoki; Col. 4, Paragraphs 0057-0064*).

The Wen Reference

Wen is directed to planar materials having bandgap properties. (See, Wen; Abstract). Wen teaches using printing means to form "embedded" fractal patterns on a substrate (*See, Wen; Col. 2, lines 9-10; Col. 6, lines 27-29*).

The Claims are Patentable Over the Cited References

The present application is generally directed to a method for producing a photonic crystal.

As defined by amended independent Claim 1, a method for producing a photonic crystal in which a first dielectric and a second dielectric different in relative dielectric constant from the first dielectric are periodically arrayed, is provided. The method includes the steps of fabricating a first composite dielectric in which the first dielectric and the second dielectric are periodically arrayed in one and the same plane. A laminating step on the first composite dielectric a second composite dielectric is provided in which the first dielectric and the second dielectric are periodically arrayed in one and the same plane. The first composite dielectric and the second composite

dielectric are obtained by use of a printing technique. The first composite dielectric has holes obtained by use of the printing technique which penetrate along the thickness direction thereof and are formed in a predetermined pattern. The first dielectric and the second dielectric each are a dielectric ceramic.

The applied references fail to disclose or suggest the above features of the claims of the present invention. In particular, the applied references fails to disclose or suggest "wherein said first composite dielectric has holes obtained by use of said printing technique which penetrate along the thickness direction thereof and are formed in a predetermined pattern, and said first dielectric and said second dielectric each are a dielectric ceramic," as required by amended independent Claim 1 of the present invention.

The applied Wen reference teaches using printing means to form "embedded" fractal patterns on a substrate (See, Wen, Col. 2, lines 9-10 and Col. 6, lines 27-29). However, the disclosed patterns of Wen, thus formed do not penetrate through the substrate.

Similarly, neither Leung nor Aoki disclose a composite dielectric having penetrating holes formed in a predetermined pattern and obtained by use of a printing technique. Aoki discloses a plurality of circular through holes, but they are positioned in the frames of the two dimensional photonic crystal plates and do not constitute dielectrics. They are intended to position those plates together with microspheres (positioning member). Leung's figures show holes but each one of the layers forming a photonic band gap structure (each layer corresponds to a composite dielectric of the present invention) does not have holes but rather have spaces. Those spaces represent places without rods and are not obtained by printing means.

According to the Office Action, Wen teaches using printing means to form the dielectric layers *(See, Office Action; page 2)*. Applicant respectfully submits that Wen's

fractal material (dielectric substrate) forms a band gap material on its own and is not intended to form dielectric layers of a photonic crystal. Accordingly, it is not appropriate to combine Wen with Aoki which discloses lamination of two dimensional photonic crystal plates.)

Since the cited references fail to disclose, teach or suggest the above features recited in amended independent Claim 1, those references cannot be said to anticipate nor render obvious the invention which is the subject matter of that claim.

Accordingly, amended independent Claim 1 is believed to be in condition for allowance and such allowance is respectfully requested.

Moreover, Applicant submits that as there are no pending rejections of independent Claim 23, that claim has been amended to make clear that the first dielectric and said second dielectric each are a dielectric ceramic. Accordingly, amended independent Claim 23 is also believe to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from amended independent Claims 1 and 23 and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

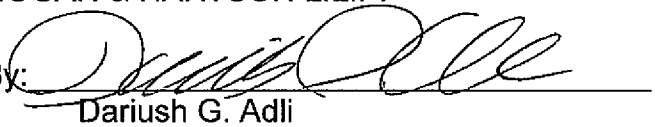
If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los

Angeles, California telephone number (310) 785-4721 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: June 24, 2008

By: 
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